Legacy Sediment Site Report for the Headwaters – South Fork Trinity River Drainage

Shasta-Trinity National Forest

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INTRODUCTION

The purpose of this report is to summarize the known sediment sources that lie within the Headwaters – South Fork Trinity River Drainage. This drainage contains only two roads (27N22 and 27N23) with a total length of about 8.7 miles. The sites identified in this report have been scored as the highest rated priorities for restoration of all the inventoried legacy sediment sites on the west side of the Shasta-Trinity National Forest.

IDENTIFICATION

A legacy sediment site meets all of the following conditions (Cal. Regional Water Quality Control Board, 2015):

- is discharging or has the potential to discharge sediment to waters of the state in violation of applicable water quality requirements;
- was caused or affected by human activity; and
- may feasibly and reasonably respond to prevention and minimization management activities.

Roads are the dominant sources of sediment caused by human activities (US EPA, 1998). Road related sediment reduction targets for the South Fork Trinity River sub-basin include the following:

- less than one percent of stream crossings should fail or divert water as a result of a 100-year or smaller flood,
- the length of hydrologically connected roads that drain surface runoff directly into streams should be reduced,

Legacy sediment sites that are identified in this report include undersized stream crossing culverts, stream crossings with diversion potential, and hydrologically connected roads. All road/stream crossings within the Headwaters – South Fork Trinity River Drainage have been inspected in the field and analyzed in the office. Culvert diameters and bankfull widths have been measured. Crossings with diversion potential and hydrologically connected roads have been identified. The culvert size for a 100-year flood peak flow plus debris has been estimated using the model StreamStats (Ries III and others, 2017) and the Federal Highway Administration culvert capacity nomograph with a 0.67 headwall-to-culvert diameter ratio (Weaver and others, 2015).

INVENTORY

Legacy sediment sites within the Headwaters – South Fork Trinity River drainage include 17 stream crossings (Figure 1). The legacy sediment sites are described in Table 1. All of the culverts are undersized. Four of the inlets are completely buried (H08, H11, H14, and H19) and several others are nearly buried, which greatly increases the risk of the road being washed away in a storm. The road is actively eroding above site H03 due to a buried culvert inlet at H19 (see cover photo).

Figure 1. Map showing locations of inventoried legacy sediment sites.

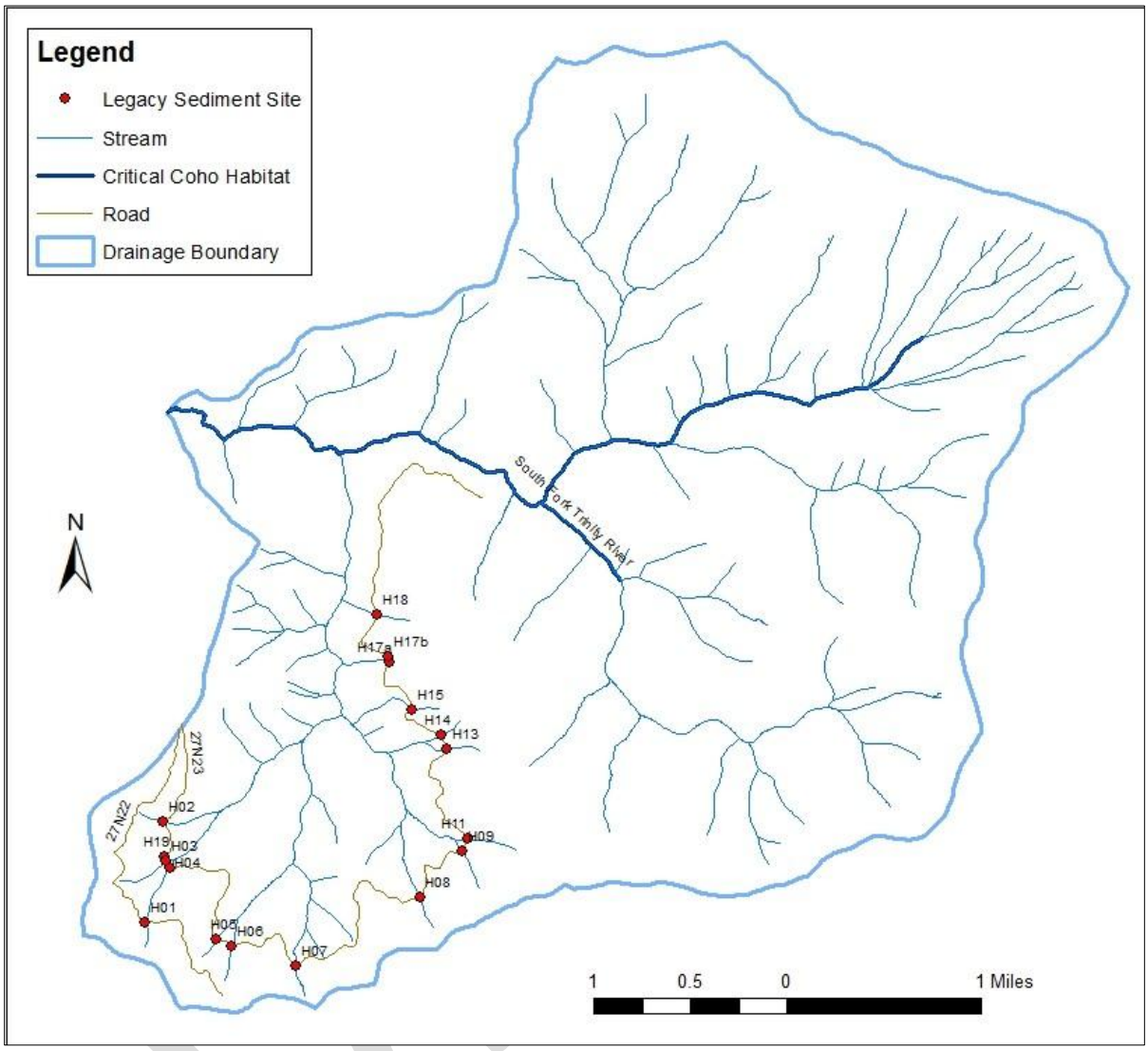

Table 1. Inventoried legacy sediment sites of the Headwaters – South Fork Trinity River Drainage.

ID	Latitude	Longitude	Fill Volume (cubic yards)	Problem(s)
H01	40.1386	-123.0656	120	undersized culvert, diversion potential
H02	40.1463	-123.0640	7040	undersized culvert, diversion potential
H03	40.1430	-123.0637	3205	undersized culvert, hydrologically connected
H04	40.1426	-123.0633	7886	undersized culvert, diversion potential
H05	40.1374	-123.0589	6012	undersized culvert, hydrologically connected
H06	40.1369	-123.0573	1722	undersized culvert, hydrologically connected
H07	40.1353	-123.0510	561	undersized culvert
H08	40.1404	-123.0391	1685	undersized culvert, diversion potential

H09	40.1439	-123.0348	6078	undersized culvert, diversion potential
H11	40.1450	-123.0343	3974	undersized culvert
H13	40.1517	-123.0362	177	undersized culvert, diversion potential, hydrologically connected
H14	40.1527	-123.0369	133	undersized culvert, diversion potential, hydrologically connected
H15	40.1548	-123.0395	1301	undersized culvert, diversion potential
H17a	40.1581	-123.0419	1255	undersized culvert
H17b	40.1586	-123.0421	1591	undersized culvert, hydrologically connected
H18	40.1618	-123.0432	8279	undersized culvert
H19	40.1436	-123.0640	154	undersized culvert, diversion potential (see cover photo), hydrologically connected

PRIORITIZATION

Prioritization criteria for legacy sediment sites have been used to score the priority for treatment of each of the legacy sediment sites in the project area[1]. The score of each site has been compared to all the identified legacy sediment sites on the west side of the Shasta Trinity National Forest. All of the legacy sediment sites located in the Headwaters drainage are rated high priority for restoration. Several factors in particular that make this drainage a high priority include its location in the Upper South Fork Trinity River Key Watershed, its location in unstable geologic terrane west of the main stem of the South Fork Trinity River, its greater than average density of critical coho habitat, and the fact that nearly all of the land in the sub-watershed is owned by the Forest Service.

TREATMENT

Treatments for each of the legacy sediment sites are proposed in Table 2. Best management practices that are to be used in treating all the sites are identified in Appendix A.

Table 2. Proposed treatments of the legacy sediment sites located in the Headwaters-South Fork Trinity River Drainage.

H01	Replace existing 2 foot diameter culvert with a 5 foot diameter culvert. Construct a critical dip.
H02	Replace existing 2 foot diameter culvert with a 5.5 foot diameter culvert. Construct a critical dip.
H03	Replace existing 3 foot diameter culvert with a 6 foot diameter culvert with a flared inlet. Construct a rolling dip.
H04	Replace existing 4 foot diameter culvert with a 6.5 foot diameter culvert with a flared inlet. Construct a critical dip.
H05	Replace existing 3 foot diameter culvert with a 7 foot diameter culvert with a flared inlet. Construct a rolling dip.
H06	Replace existing 2 foot diameter culvert with a 6.5 foot diameter culvert. Construct a rolling dip.
H07	Replace existing 2 foot diameter culvert with a 4.5 foot diameter culvert.

[1] Prioritization criteria are describe in Appendix A.

H08	Replace existing 2 foot diameter culvert with a 4.5 foot diameter culvert with a flared inlet. Construct a critical dip.
H09	Replace existing 4 foot diameter culvert with a 6 foot diameter culvert with a flared inlet. Construct a critical dip.
H11	Replace existing culvert with a 5 foot diameter culvert with a flared inlet.
H13	Replace existing 2 foot diameter culvert with a 6 foot diameter culvert with a flared inlet. Construct a critical dip and a rolling dip.
H14	Replace existing 2 foot diameter culvert with a 6 foot diameter culvert with a flared inlet. Construct a critical dip and a rolling dip.
H15	Replace existing 3 foot diameter culvert with a 6 foot diameter culvert. Construct a critical dip.
H17a	Replace existing 3 foot diamater culvert with a 5 foot diameter culvert.
H17b	Replace existing 3 foot diameter culvert with a 5.5 foot diameter culvert with a flared inlet. Construct a rolling dip.
H18	Replace existing 2 foot diamater culvert with a 4 foot diameter culvert.
H19	Replace existing 2 foot diamater culvert with a 5 foot diameter culvert with a flared inlet. Construct a critical dip and a rolling dip.

REFERENCES

California Regional Water Quality Control Board, North Coast Region. 2015. Waiver of Waste Discharge Requirements for Nonpoint Source Discharges Related to Certain Federal Land Management Activities on National Forest System Lands in the North Coast Region.

Ries III, K.G., J.K. Newson, M.J. Smith, J.D. Guthrie, P.A. Steeves, T.A. Haluska, K.A. Kolb, R.F. Thompson, R.D. Santoro, and H.W. Vraga. 2017. StreamStats, version 4. U.S. Geological Survey Fact Sheet 2017-3046.

U.S. Department of Agriculture, Forest Service. 1995. Shasta-Trinity National Forest Land and Resource Management Plan.

U.S. Department of Agriculture, Forest Service. 2017. Draft Region 5 FSH 2509.22 Soil and Water Conservation Handbook, Chapter 10.

U.S. Environmental Protection Agency, Region 9. 1998. South Fork Trinity River and Hayfork Creek sediment total maximum daily loads.

Weaver, W.E., E.M. Weppner, and D.K. Hagans. 2015. Handbook for forest, ranch and rural roads: a guide for planning, designing, constructing, reconstructing, upgrading, maintaining and closing wildland roads (Rev. 1st ed.). Mendocino County Resource Conservation District, Ukiah, California.

APPENDIX A: STREAM CROSSING UPGRADE GUIDE FOR NEPA PROJECTS ON THE WEST SIDE OF THE SHASTA-TRINITY NATIONAL FOREST